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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/811,660      | 03/19/2001  | Akiteru Takatsuka    | 36856.447           | 9407             |

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EXAMINER

DOUGHERTY, THOMAS M

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 04/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |  |   |  |
|------------------------------|--|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>09/811,660   | <b>Applicant(s)</b><br>TAKATSUKA ET AL. |  |
|                              | <b>Examiner</b><br>Thomas M. Dougherty | <b>Art Unit</b><br>2834                 |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All   b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6, 10-12, 16-18 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,424,602) in view of Lejeune (US 6,269,326). Sato shows (figs. 38A-D) a method for selecting a piezoelectric transformer characteristic, comprising the steps of: connecting a primary-side driving section of a piezoelectric transformer (TR) to a high-frequency generator (f) while leaving a secondary-side generating section thereof in an open state (e.g. figs. 38B, 38D); causing said high-frequency generator to sequentially generate and sweep a high-frequency signal over a predetermined frequency range (4.58 MHz to 5.08MHz); measuring a resonant frequency (e.g. 1.835MHz) or a resonant resistance (1.38 ohms) or both of an input-impedance-versus-frequency characteristic of the piezoelectric transformer (TR); and selecting the characteristic (e.g. 1.38 ohms or 4.83 MHz, respectively) or of the piezoelectric transformer (TR) based on the value of the measured resonant frequency. The transformer in every figure is in an isolated state in which it is not mounted on a mounting substrate. Only the input-impedance-versus-frequency characteristic of the piezoelectric transformer is measured.

Sato doesn't note retention or rejection of the piezoelectric transformer does not have a desired characteristic based on the value of the measured resonant frequency or note that his testing is a part of quality control of the device.

Lejeune shows a testing procedure for electronic components in his figure 2 and he notes at col. 2, lines 25-27, that "measured values are compared with typical values in order to accept or reject the components as a function of this comparison. He doesn't provide what specific components are to be tested. It would have been obvious to one having ordinary skill in the art to employ such a testing methodology in the selection process of Sato, such as is taught by Lejeune, at the time of the Sato invention in order to prevent components which fail quality testing from being provided to users. Moreover, such testing is typical in manufacturing and is a typical part of quality control, to employ such involves no inventive step.

Claims 4-6, 10-12, 16-18 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,424,602) and Lejeune (US 6,269,326) in view of Onishi et al. (JP 2000-216450). Given the combined invention of Sato et al. and Lejeune as noted above, it is not noted by them that they measure or determine the bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by subtracting a resonant-frequency  $f_r$  from an antiresonant-frequency  $f_a$  and selecting the characteristic of the piezoelectric transformer based on the value of the measured bandwidth. Onishi et al. note (see solution) a method for selecting a piezoelectric transformer characteristic, comprising the steps of: connecting (e.g. see fig. 1) a primary-side driving section of a piezoelectric transformer (2) to a high-

frequency generator (E); causing said high-frequency generator to sequentially generate and sweep a high-frequency signal over a predetermined frequency range; measuring a resonant frequency ( $f_r$ ) or a resonant resistance (see  $|Y|$  of fig. 2 which is inverse of impedance) or both of an input-impedance-versus-frequency characteristic of the piezoelectric transformer (2); they measure or determine the bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by subtracting a resonant-frequency  $f_r$  from an antiresonant-frequency  $f_a$  and select the characteristic of the piezoelectric transformer based on the value of the measured bandwidth. The transformer in every figure is in an isolated state in which it is not mounted on a mounting substrate. Onishi's secondary-side generating section is not shown as being in an open state. It would have been obvious to one having ordinary skill in the art to determine a characteristic of the piezoelectric transformer of Sato et al. and Lejeune, based on the value of the measured bandwidth, determined by subtracting a resonant-frequency  $f_r$  from an antiresonant-frequency  $f_a$ , as is shown by Onishi, at the time of the Sato invention, since "the power conversion efficiency of a power conversion device is set to be maximum", as is noted by Onishi.

Claims 4-6, 10-12, 16-18 and 22-24 are further rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al. (US 5,424,602) and Lejeune (US 6,269,326) in view of Kawada (US 3,778,648). Given the invention of Sato et al. and Lejeune as noted above, it is not noted by them that they measure or determine the bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by subtracting a resonant-frequency  $f_r$  from an antiresonant-frequency  $f_a$  and selecting the

characteristic of the piezoelectric transformer based on the value of the measured bandwidth. Kawada shows (fig. 1) and notes (see col. 2, ll. 13-31) a method for selecting a piezoelectric transformer characteristic, comprising the steps of: connecting a primary-side driving section of a piezoelectric transformer to a high-frequency generator; causing said high-frequency generator to sequentially generate and sweep a high-frequency signal over a predetermined frequency range; measuring a resonant frequency ( $f_r$ ) or a resonant resistance (see  $|Z|$ ) or both of an input-impedance-versus-frequency characteristic of the piezoelectric transformer; he measures or determines the bandwidth of an input-impedance-versus-frequency characteristic of the piezoelectric transformer by subtracting a resonant-frequency  $f_r$  from an antiresonant-frequency  $f_a$  and select the characteristic of the piezoelectric transformer based on the value of the measured bandwidth, which is required for determination of his driving frequency. He doesn't note that the transformer is in an isolated state in which it is not mounted on a mounting substrate. It is not known if Kawada's secondary-side generating section is in an open state.

It would have been obvious to one having ordinary skill in the art to determine a characteristic of the piezoelectric transformer of Sato et al. and Lejeune based on the value of the measured bandwidth, determined by subtracting a resonant-frequency  $f_r$  from an antiresonant-frequency  $f_a$ , as is shown by Kawada, at the time of the Sato invention, since "the power conversion efficiency of a power conversion device is set to be maximum", as has been noted.

**Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art reads on at least some aspects of the Applicants' claimed invention, for example, Ottesen et al. (US 6,281,676) note discarding components which fail quality control tests.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.

tmd  
tmd

April 22, 2003

Thomas M. Dougherty  
2834